

International Portfolio Diversification: Assessing The Benefits Of Investing In Africa

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ABSTRACT

Research on the benefits of international portfolio diversification is abundant. During the last decade, a lot of attention was given to emerging markets. However, studies carried on such potential benefits in Africa are scant. This paper aims at filling this gap. The main aim of this paper is to investigate the potential benefits of a Mauritian investor when diversifying his investment portfolio into different African stock markets. The benefits that may arise for a non-African investor are also assessed. The minimum variance portfolio was computed and the effect of adding new countries or the MSCI World Index to the African portfolio evaluated. The study revealed that correlation is low among African countries and both the Mauritian investor and the global investor can further reduce risk and enhance return by investing in selected African countries.

1.0 Introduction

Markowitz laid the foundation stone for modern portfolio management. Diversifying across assets, industry and then across countries has been the main aim of many investors mainly because of the potential benefits of diversification. Several studies have been undertaken to analyse the benefits of international portfolio diversification in developed as well as emerging markets. However, studies carried on such potential benefits of investing in African stock exchanges are scant. This paper aims at filling this gap. The main aim of this paper is to investigate the potential benefits of a Mauritian investor when diversifying his investment portfolio into different African stock markets. The benefits that may arise for a non-African investor are also evaluated.

2.0 Literature Review

There is a high expectation that investment in emerging markets may be a vehicle to boost portfolio return and to some to ease at least substantially the pension problem in highly developed countries. There are basically three advantages in investing in foreign stocks. They are better risk diversification, higher rate of return and improved economic environment. Reisen (2000) concluded that international diversification reduces risk better than domestic diversification because securities exhibit stronger correlations as a result of their joint exposure to country specific shocks. In fact, globalisation is expected to raise the expected return for a given risk level. The diversification benefits consist therefore of reduced risk resulting in markets that are relatively uncorrelated or negatively correlated.

Levy and Sarnat (1970), Lessard (1973) and Errunza (1977) studied the impact of diversification on an international scale. In addition, high confidence, the end of the debt crisis and soaring return of a couple of emerging stock markets at the beginning of the 1990's attracted a lot of interest from researchers like Divecha, Drak and Stefek (1992), Diwan, Errunza and Senbet (1992), Harvey (1995b) and Sappenfield and Speidell (1992). Errunza (1977) highlighted the importance of developing countries in international diversification.

Bekaert, Erb, Harvey and Viskanta (1996) explained that the main differences between investment in developed markets and emerging markets are accountable to regulatory changes, currency devaluation, failed economic plans, level of corporate governance and national financial shocks. The three main characteristics of emerging markets are high average returns, high volatility and low correlation across the emerging markets with developed markets. Bekaert and Harvey (1997a) suggested that as a market becomes more and more integrated into the world capital

markets, the world information becomes relatively more important. They indicated that the increasing influence of world factors on expected returns might manifest itself in increased correlation with developed market benchmarks.

Furthermore, Bekaert, Erb, Harvey and Viskanta (1996) found a positive relation between returns and volatility of emerging markets. However, among segmented markets, the relation between volatility and expected returns may appear weak because the risk premium accorded to volatility could vary across country (Bekaert and Harvey- 1995).

International portfolio diversification relies on low correlation across markets. In fact, low correlation enables the investor to reduce his total portfolio risk without reducing return. Solnik, Boucrelle and Le Fur (1996) found that correlations were lower for dollar returns than for local currency returns. Hence, it can be argued that foreign currencies help to diversify domestic portfolio by reducing the correlation with foreign markets. Moreover, they observed that developed countries are becoming more correlated over time.

Harvey (1995) pointed out that correlation between emerging markets and developed market is low. Hence, in the Markowitz framework, the addition of emerging markets to a portfolio of developed markets should significantly shift the investment opportunity set. Harvey (1995) concluded the cross-country correlation for the emerging market group to be low and negative. Moreover, the cross-country correlation between the emerging markets and developed ones is low (15%). However, adding emerging markets to a given portfolio gives the global minimum variance portfolio. Risk (represented by the standard deviation) decreases by 6%.

Grubel (1968) pioneered an international diversification strategy by including South Africa in an eleven-developed country portfolio. Later, Divecha, Drak and Stefek (1992) observed that the developing countries have a low correlation among themselves leading to a reduction of their global risk when considered as a group. Divecha, Drak and Stefek (1992) showed that the introduction of emerging markets in the global portfolio in a proportion of 20% reduces portfolio risk, even though the expected returns of these markets are low.

Sappenfield and Speidell (1992) observed an increase in the correlation between developed countries. The impact of global events like the October 1987 crash or the invasion of Kuwait in 1990 may have contributed to this rise in correlation. This implies that greater market integration may nullify any diversification benefit in an optimal portfolio. The average correlation of developed markets with the US was 0.62 whereas it was only 0.22 with emerging markets. Hence, emerging markets provide an interesting solution in international portfolio diversification. In fact, international events have lower impact on emerging markets than developed countries. During international events or international financial crisis, the isolation of these markets helps in fulfilling their role in diversifying risks. Hence, it is optimal to include emerging markets in an international portfolio because of their low correlation with other markets.

Using the same principle, Diwan and Errunza and Senbat (1994) built an efficient frontier for three distinct groups: developed markets, emerging markets and a combination of both. Their study confirmed the superiority of the global portfolio on the developed market portfolio.

Arouri (2004) considered that international diversification is often considered as the best instrument to improve portfolio performance. In fact, correlation between asset returns from different markets is lower than correlation within the same market. Empirical evidence on the benefits of international diversification is well documented, though much of this literature has been directed at the developed economies and the newly liberalized economies of South Asia and Latin America. More recently, the oil dominated economies of the Middle Eastern gulf region have launched a number of initiatives to liberalize their financial markets (Abraham, Seyyed and Al-Elg (2001)).

Butler and Joaquin (2001) also agreed that the fundamental rationale for international portfolio diversification is that it expands the opportunities for gains from portfolio diversification beyond those that are available through domestic securities. Solnik (1974) and Lessard (1976), among others, have presented evidence that national factors have a strong impact on security returns relative to that of any common world factor.

3.0 Research Methodology

Secondary data was used for the analysis. The sample consisted of eight countries namely Botswana, Ghana, Kenya, Mauritius, Namibia, Nigeria, South Africa and Zimbabwe. Monthly price data was extracted from the Standard and Poor's Global Stock Market Factbook from 1998 to 2004. The data collected were in point term and were not value denominated in their respective local currencies. Necessary calculations had to be done to convert them in terms of USD to cancel out returns derived from currency translation when constructing a portfolio of both local and foreign stocks. The MSCI World Index and G7 Index were downloaded from the MSCI website.

The variance – covariance matrix was calculated as follows :

$$X = \begin{bmatrix} R_{BO1} & R_{GH1} & R_{KE1} & R_{MA1} & R_{NA1} & R_{NI1} & R_{SA1} & R_{ZM1} & R_{G1} & R_{W1} \\ \cdot & & & & & & & & & \\ \cdot & & & & & & & & & \\ \cdot & & & & & & & & & \\ R_{BO2} & & & & & & & & & \end{bmatrix}$$

$$X_{ER} = \text{Excess Return Matrix} = R - \bar{R}$$

$$\text{Transpose of } X_{ER} = X^T$$

$$\text{Variance Covariance Matrix} = \frac{X^T - X}{n}$$

An African portfolio consisting of the above countries was constructed. The selection criterion is based on the Country Risk Ranking obtained from the Euromoney. Mauritius, being the main country, will be matched with the lowest risky country and alternatively the others will be added till the highest risky one is reached. A minimum variance portfolio was then constructed. The country next in the list was added to the existing minimum variance portfolio. The minimum variance portfolio was again calculated. This process was repeated until the last country in the list was included to create the African portfolio. The African portfolio was then added to the MSCI World Index and then the G7 Index.

4.0 Analysis and Findings

International portfolio diversification depends on the correlation of equity markets across countries. Table 1 shows the correlation matrix of monthly return of the sample. It can be observed that the correlations across the African sample are low or negative. These countries also have a low correlation with the MSCI World Index and the G7 Index, except for South Africa that has a high correlation (approximately 60%) with the World Index and the G7 Index. The absence of interdependence between most of the surveyed African Market provides diversification opportunities. Such results may limit “contagion” effect that was so predominant during the Asian Crisis in 1997.

Table 1: Correlations Coefficients of Monthly Index Returns (1998-2003)

	Botswana	Ghana	Kenya	Mauritius	Namibia	Nigeria	South Africa	Zimbabwe	G7	World Index
Botswana	1									
Ghana	.173	1								
Kenya	-.241	.114	1							
Mauritius	.057	.344	.352	1						
Namibia	-.048	.090	.202	.168	1					
Nigeria	-.031	.003	.194	.215	-.103	1				
South Africa	.069	.078	-.044	-.015	.034	.182	1			
Zimbabwe	-.127	.133	.130	-.064	.083	.014	-.002	1		
G7	.005	.121	.113	.107	.156	.126	.599	.024	1	
World Index	.007	.127	.117	.118	.150	.123	.602	.017	.997	1

Low correlation among the African markets is in accordance with Khanna (1996) that is returns of emerging markets are relatively uncorrelated. This is partly due to restrictions on outside participations. Such factor is true in Africa as pointed out by Mwenda (2000) where there are still some restrictions on foreign portfolio investment and also restrictive foreign exchange controls.

Table 2 : Risk-Return Profile of each country

	Expected Monthly Return (%)	Standard Deviation of Returns (%)	Beta (from the Mauritian investor Perspective)
Mauritius	0.55	3.81	
Botswana	2.0	5.05	0.0757
Ghana	3.02	7.83	0.7076
Kenya	-0.054	5.39	0.4986
Namibia	1.17	12.86	0.5674
Nigeria	1.75	5.50	0.3104
South Africa	1.00	7.72	-0.0304
Zimbabwe	8.381	21.52	-0.3617

Table 2 shows the risk-return profile on a monthly basis of the selected African countries. Zimbabwe has the highest volatility, but return is also very high. Market risk has also been calculated from the Mauritian perspective. All beta values are below 1, with South Africa and Zimbabwe having negative values. Indeed, these results imply that international diversification may significantly reduce the risk of portfolio returns as they are less sensitive to changes in the Mauritian market return.

Table 3: Foreign Market Risk (Beta) from a global perspective

MSCI World Index		Standard Deviation =4.930% Monthly Return =0.14%	
	Correlation with MSCI World Index	Standard Deviation of Returns	Beta (from MSCI World Index Perspective)
Botswana	0.007	5.090%	0.007
Ghana	0.127	7.889%	0.203
Kenya	0.117	5.432%	0.129
Mauritius	0.118	3.835%	0.092
Namibia	0.15	12.953%	0.394
Nigeria	0.123	5.537%	0.138
South Africa	0.602	7.773%	0.949
Zimbabwe	0.017	21.671%	0.075

Table 3 shows that the correlation between MSCI World Index and the selected countries were low, except for South Africa which has a beta value near to 1.0 and a correlation of about 60%. The result would suggest the possibility of further diversifying one's international portfolio by investing in these countries. Similar results were obtained when using the G7 Index. Irving (2005) and Mwenda (2000) explained that the main factors that are preventing African stock markets from developing are low liquidity, lack of infrastructure and political instability. They argued that due to these barriers, investors consider African countries as risky and are unwilling to invest in their markets. The African countries are perceived as risk reduction investment target but are the victims of their own bad socio-economic structure.

An African portfolio was constructed based on the ranking adopted in Table 4. The rationale for using country risk profile may be explained by the perceived unstable political and sociological factors that characterize the African countries. For instance, if correlation was used as a mean of ranking, Zimbabwe will rank first but the potential risk-return benefits of including this country in an African portfolio is insignificant¹. The ranking based on country risk profile offered better country selection and it is as follows:

Table 4 : Country Risk Ranking in Ascending Order (source : Euromoney)

	Countries	Rank (out of 185 countries)
	Mauritius	57
1.	Botswana	48
2.	South Africa	54
3.	Ghana	98
4.	Kenya	126
5.	Nigeria	137
6.	Namibia	173
7.	Zimbabwe	175

¹ Results are available on request.

Table 5 : The minimum variance portfolios

Countries in the Portfolio	Label	Minimum variance portfolio (risk, mean monthly return)
Mauritius, Botswana	P1	(3.12%, 1.02%)
P1 + South Africa	P2	(2.92%, 1.02%)
P2+ Ghana	P3	(3.29%, 0.79%)
P3 + Kenya	P4	(3.37%,0.47%)
P4 + Nigeria	P5	(3.17%, 0.79%)
P5 + Namibia	P6	(3.13%, 0.98%)
P6 + Zimbabwe (African Portfolio)	P7	(3.27%, 1.14%)
African Portfolio and MSCI World Index	P8	(2.98%, 0.91%)
African Portfolio and G7 Index	P9	(2.97%, 0.86%)

Table 5 shows how diversification reduces risk. Adding Botswana to the Mauritian portfolio reduces risk by 22% and increases monthly return by 46%. By creating a comprehensive African portfolio, the Mauritian investor will gain a risk reduction of 16.5% and a rise in monthly return by 52%. Adding the African portfolio to the MSCI World Index further reduces risk by 64.4 % for the global investor and increases return by nearly 85%. Similar findings were made when the African portfolio was added to the G7 Index. Hence, it may be argued that developed markets investors may further diversify their portfolio by investing in Africa. However, an investor has also to take into account the reality of these markets. The results support a strong case for diversification in Africa as it may be for Asian emerging economies or Latin American markets.

5.0 Conclusion

African stock markets are very weakly correlated with other important international indexes which mean that risk reduction is promising in the African region. Even within Africa, the correlation between equity markets in different countries is low, increasing the diversification opportunities within the region. However, although Africa provides such investments benefits, foreign investors have ignored African equity markets and Africa as a whole as well. Foreign Direct Investment in this part of the world has been relatively low. They have mostly preferred the East Asian countries and Latin American countries. The main reasons are mostly that investing in Africa is risky, the region is a basket case that is politically unstable, regulations are insurmountable, there are no investment opportunities, and there is lack of information, poor liquidity, trading difficulties and small size of markets. However, diversification benefits exist both for the African investor and the developed market investor. As African countries will adopt fair accounting practices, a good regulatory framework and sound corporate governance practices, investment in African stock markets will rise because of the diversification benefits they offer to investors.

6.0 References

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